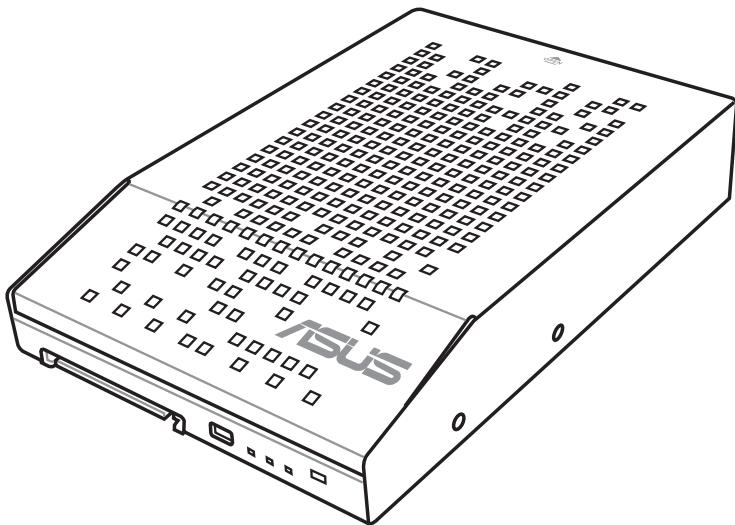




Hyper Express

User Guide



E9496
First Edition
October 2014

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1. Package contents

Check your package for the following items:

- 1 x Hyper Express
- 1 x Support CD
- 1 x SATA Express cable
- 1 x 2-pin front panel led convert cable
- 1 x M.2 & mSATA screw package



If any of the above items is damaged or missing, contact your retailer.

2. Hyper Express specifications summary

Hyper Express allows you to install two M.2 or mSATA storage devices providing flexibility while enjoying the ultra-fast transfer speed of up to 10 Gb/s.

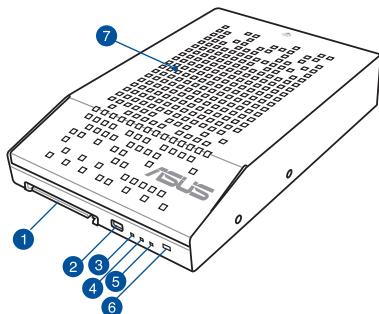
Chipset	ASMedia® 1062R RAID Controller
Interface	SATA Express interface (PCI Express 2.0 x2 bandwidth)
External Connectors	1 x SATA Express connector 1 x 2-pin front panel led header(Q-LED header) 1 x mode switch button
Internal Connectors	Lane 1 sockets*: 1 x M.2 Socket 3 with M Key design, type 2242/2260/2280/22110 storage devices support (Support SATA SSD only)** 1 x mSATA 6.0 Gb/s port support half or full size SSD (Support SATA SSD only)** Lane 2 sockets*: 1 x M.2 Socket 3 with M Key design, type 2242/2260/2280/22110 storage devices support (Support SATA SSD only)** 1 x mSATA 6.0 Gb/s port support half or full size SSD (Support SATA SSD only)** * Install only one M.2 or mSATA on the same lane. ** Support two M.2 or two mSATA devices at the same time. For Super Speed mode (RAID 0 mode), it is recommended that you install the same type of storage device (two M.2 or two mSATA) for better compatibility and reliability. Installing mixed type of storage devices (one M.2 and mSATA) can be done in the Normal mode (AHCI mode) but make sure that the storage devices are not installed on the same socket lane.
Data Rate	SATA Express maximum at 10Gbps
LEDs and button	1 x Lane 1 sockets LED (S1, green) 1 x Lane 2 sockets LED (S2, green) 1 x Super Speed mode* change LED (blue) 1 x Mode switch button
Operating Systems Supported	Windows® 7, Windows® 8, Windows® 8.1
Support CD	ASUS Hyper Express Utility
Size	3.5-inch standard (14.6 cm x 10 cm x 2.5 cm) (L x W x H)



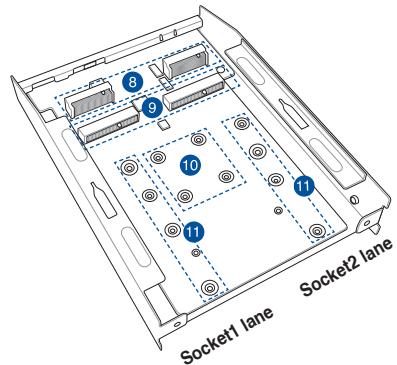
-
- Specifications are subject to change without notice.
 - SSD data rate depends on the speed of the installed SSDs.
 - Thermal condition must be monitored during SSD usage.
-

3. Hyper Express hardware feature

Front view



Rear view (without top cover)



Parts / components	Short description
① SATA Express connector	Connects to the SATA Express header on the motherboard. Provides maximum data transfer rate of up to 10 Gb/s
② 2-pin front panel LED header (Q-LED header)	Connects to the front panel LED of the chassis.
③ Lane 2 sockets (S2) LED indicator	Green LED lights up to indicate that a storage device (M.2 or mSATA) is installed on the Lane 2 sockets (S2).
④ Lane 1 sockets (S1) LED indicator	Green LED lights up to indicate that a storage device (M.2 or mSATA) is installed on the Lane 1 sockets (S1).
⑤ Super Speed mode change LED	Super Speed mode change LED indications: ON: Super Speed mode BLINKING: When mode is changing OFF: Normal mode
⑥ Mode switch button	Press and hold this button for 5 seconds to manually switch from Normal mode to Super Speed mode. To switch from Super Speed mode to Normal mode, press the Mode switch button twice.
⑦ Top cover	Remove the top cover when installing storage devices to the Hyper Express.
⑧ M.2 slot connectors	Allows you to install supported M.2 cards.
⑨ mSATA slot connector	Allows you to install supported mSATA cards.
⑩ mSATA screw slots	These screw slots are for the stand screw of mSATA cards.
⑪ M.2 screw slots	These screw slots are for the stand screw of M.2 cards.

4. Recommended configurations

It is highly recommended that you install two M.2 card or two mSATA cards for the Normal mode (AHCI) or for the Super Speed mode (RAID 0) to ensure optimum performance and reliability.



Always use the same size, type, and model of M.2 or mSATA SSD.



Mixed configuration (one M.2 and one mSATA SSD) in Normal mode is possible but the performance and reliability is not guaranteed. For this kind of configuration, always install one M.2 SSD or one mSATA SSD on each lane. DO NOT install both on the same lane.

For the list of compatible mSATA and M.2 SSD storage cards, refer to the Qualified Vendors List table.

4.1 Qualified Vendors List for mSATA SSD

Model		Super Speed mode speed ATTO
CRUCIAL	M500 480GB	Read:749 MB/s Write:785 MB/s
KINGSTON	SMS200S3/120G	Read:745 MB/s Write:787 MB/s
INTEL	SSDMCEAW120A401	Read:738 MB/s Write:783 MB/s
ADATA	SSD SX300	Read:738 MB/s Write:563 MB/s
SAMSUNG	840EVO 250G	Read:721.8 MB/s Write:776.1 MB/s



- Use ATTO to test the Super Speed mode performance.
- Use only SSDs with NCQ function.

4.2 Qualified Vendors List for M.2 SATA SSD

Model		Super Speed mode speed ATTO
KINGSTON	SM2280S3-120GB	Read:752 MB/s Write:802 MB/s
CRUCIAL	M550-256GB	Read:749 MB/s Write:799 MB/s
CRUCIAL	M550-128GB	Read:749 MB/s Write:740 MB/s
KINGSHARE	KN300-128GB	Read:749 MB/s Write:337 MB/s
TRANSCEND	TS512GMTS800-512GB	Read:747 MB/s Write:610 MB/s
TRANSCEND	TS128GMTS600-128GB	Read:749 MB/s Write:306 MB/s
TRANSCEND	TS64GMTS400-64GB	Read:745 MB/s Write:159 MB/s
TIGO	M242-128GB	Read:742.1 MB/s Write:749.1 MB/s
KINGSTON	RBU-SNS6100S3/128GC-2260-128GB	Read : 741.6 MB/s Write : 794.4 MB/s
INTEL	SSDSCKGW180A4 180GB	Read:738 MB/s Write:791 MB/s
LITEON	LGT-256M6G-2280-256GB	Read:730 MB/s Write:787 MB/s
ADATA	ASP900NS38 256G	Read : 710.4 MB/s Write : 794.4 MB/s



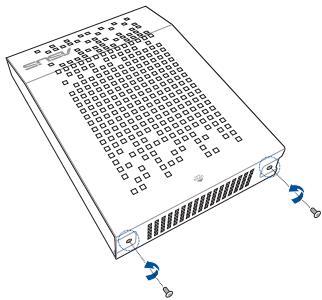
-
- Use ATTO to test the Super Speed mode performance.
 - Do not use SSD without NCQ function.
-

5. Installing storage cards to the Hyper Express

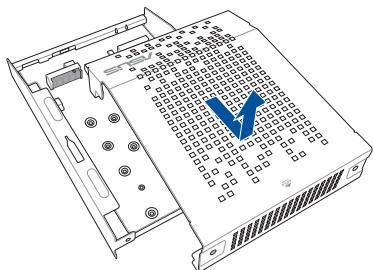
5.1 Removing the top cover

To remove the top cover of the Hyper Express:

1. Place the Hyper Express on a flat and stable surface.
2. Remove the two screws at the rear.



3. Slide the top cover toward the rear then lift it to remove. Set aside.

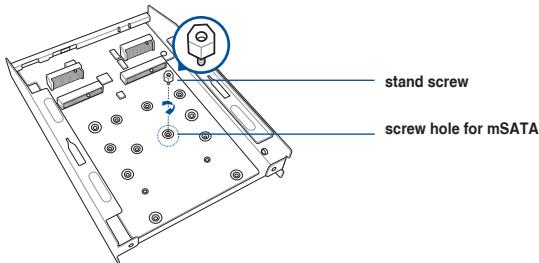


5.3 Installing mSATA SSD cards

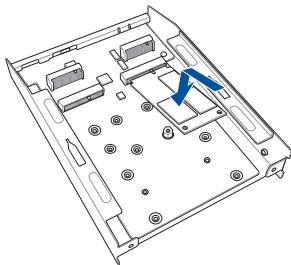
You can install two half-size or two full-size mSATA cards into the Hyper Express.

To install a full-size mSATA to the Hyper Express:

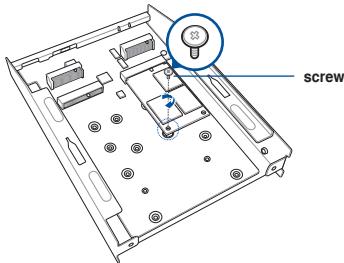
1. Locate the screw hole for the full-size mSATA on the Hyper Express.
2. Get the bundled stand screw and screw for mSATA.
3. Install the stand screw on the screw hole.



4. Insert the mSATA card into the mSATA connector then press it down ensuring the hole on the stand screw matches the hole on the mSATA.



5. Using a screw driver, secure the mSATA with a screw.
6. Repeat steps 1 to 5 to install another mSATA card.



 To install half-size mSATA cards, follow steps 1 to 6 but use the screw holes for the half-size mSATA.

5.4 Installing M.2 SATA SSD cards

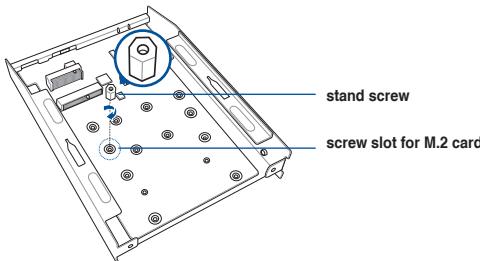
You can install two type 2242/2260/2280/22110 M.2 cards with Socket 3 M Key design into the Hyper Express.



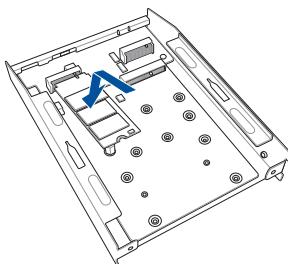
The M.2 connector supports SATA SSD only.

To install a type 2260 M.2 card:

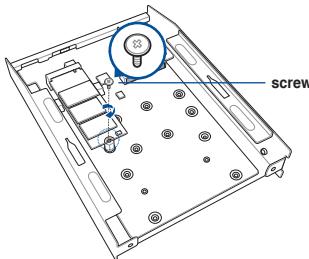
1. Locate the screw holes on the Hyper Express for the type of M.2 card to use.
2. Get the bundled stand screw and screw for your M.2 card.
3. Install the stand screw on the screw hole that corresponds to the type of M.2 card to use.



4. Insert the M.2 card into the M.2 slot connector then press it down ensuring that the hole on the stand screw matches the screw hole on the M.2 card.



5. Using a screw driver, secure the M.2 card with a screw.
6. Repeat steps 1 to 5 to install another M.2 card.



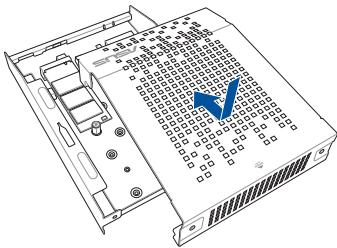


To install type 2242/2260/22110 M.2 card, follow steps 1 to 6 in installing a type 2260 M.2 card. Install the stand screw on the screw slot corresponding to the type of M.2 card you intend to use.

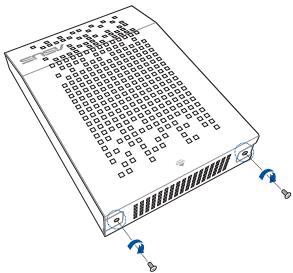
5.5 Replacing the top cover

To replace the top cover of the Hyper Express card:

1. Align and place the top cover to the Hyper express.
2. Slide the top cover towards the front ensuring that the screw holes matches the screw holes on the rear of the Hyper Express.



3. Fasten the two screw at the rear



6. Installing Hyper Express to the chassis



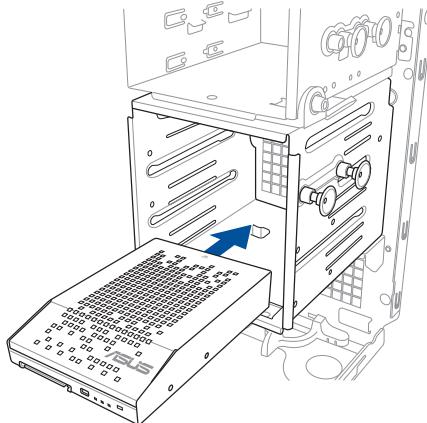
Before installing Hyper Express, ensure that you have an available 3.5-inch drive bay in your chassis.

To install the Hyper Express to the chassis:

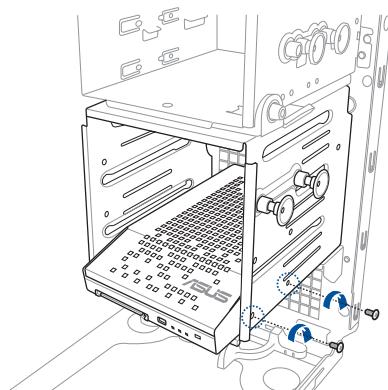
1. Align and insert the Hyper Express into an available 3.5-inch drive bay in your chassis.



Match the screw holes of the Hyper Express to the screw holes on the chassis.



2. Secure the Hyper Express with two screws.



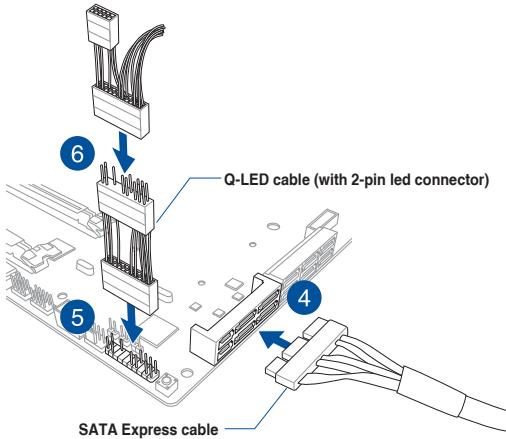
3. Prepare the bundled SATA Express cable and the Q-LED header cable.

4. Connect the SATA Express cable to the SATA Express connector on the motherboard.
5. Connect the Q-LED header cable to the connectors on the motherboard's system panel connector.

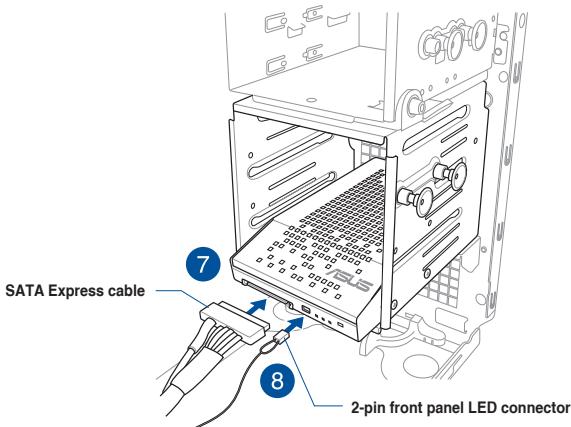


If a Q-connector is already installed, uninstall it first before installing the Q-LED header cable.

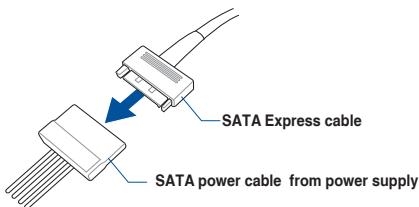
6. Connect chassis LED cable to Q-LED header cable as shown.



7. Connect the other end of the SATA Express cable to the SATA Express connector on the Hyper Express.
8. Connect the Q-LED header cable's 2-pin front panel LED connector to the connector on the Hyper Express.



9. Connect a SATA power cable from the power supply to the bundled SATA Express cable.



7. Switching mode using the Mode change button

To manually switch from Normal mode to Super Speed mode, press and hold the Mode switch button on the front panel of the Hyper Express for 5 seconds. To switch from Super Speed mode to Normal mode, press the Mode switch button twice.

When the Super Speed mode change LED is OFF, Hyper Express is in Normal mode. If the Super Speed mode change LED is ON, Hyper Express is in the Super Speed mode.

Refer to the **Hyper Express hardware feature** section for more information on the LED indications and for the location of the Mode switch button.



Always back up your data before switching mode. Hyper Express automatically formats and initializes the installed storage device every time you switch modes.



The utility automatically initializes the disk when you switch modes.

To manually initialize the disk in Windows OS:

1. Open the Disk Management application.
2. On the **Initialize Disk** window, put a check mark on Disk 0 from the **Select disks** pane, tick GPT (GUID Partition Table) from the **Use the following partition style for the selected disks:** then click OK.
3. Format the disk to complete the initialization. To format the disk, you can perform either of the following:
 - From Windows Explorer, right-click on the disk that you want to format, select **Format** then click **Start**.
 - From Windows **Disk Management**, right-click on the disk that you want to format, select **Format** then click **OK**.

8. Installing the Hyper Express Utility

To install the Hyper Express Utility, insert the bundled support CD into the optical disc drive then follow on-screen instructions.

9. Using the Hyper Express Utility

The user interface of the Hyper Express Utility consists mainly of three main tabs. Hyper Express Mode, SSD information, and Benchmark.

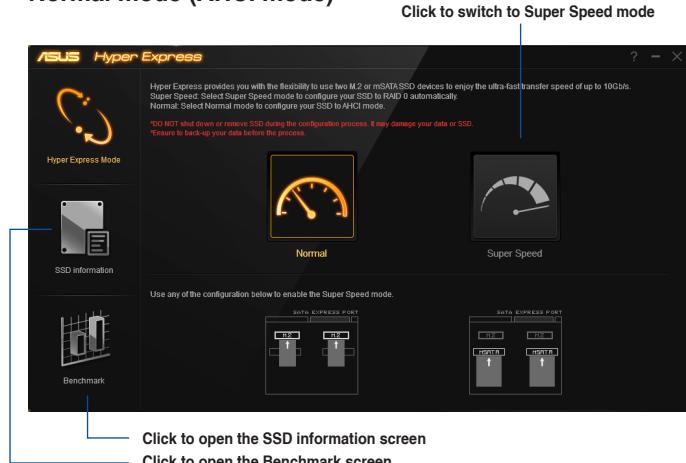


Always back up your data on the installed storage device before switching mode. The utility automatically initializes the installed storage device every time you switch modes.

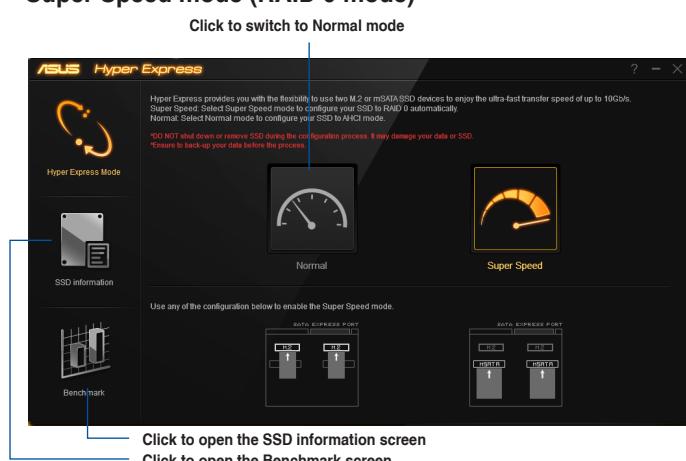
9.1 Hyper Express Mode (default view)

The Hyper Express Mode allows you to switch between the Normal mode (the default mode) and the Super Speed mode or from the Super Speed mode back to the Normal mode.

Normal mode (AHCI mode)



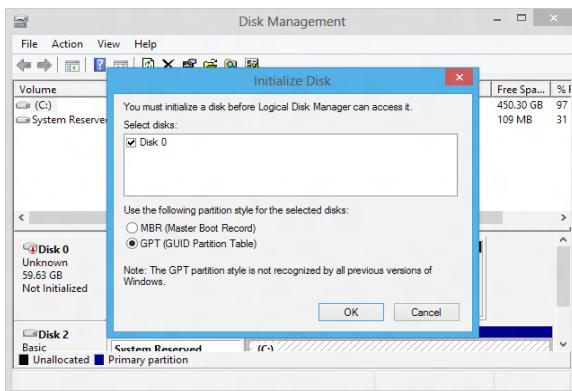
Super Speed mode (RAID 0 mode)



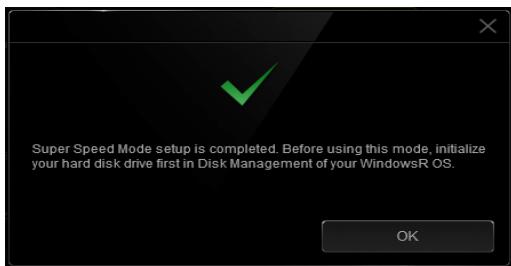
9.1.1 Switching from Normal mode to Super Speed mode

To switch from Normal mode (default) to Super Speed mode:

1. From the **Hyper Express Mode** screen, click the Super Speed icon 
2. From the **Initialize Disk** window of the Windows **Disk Management** application, put a check mark on Disk 0 from the **Select disks** pane, tick GPT (GUID Partition Table) from the **Use the following partition style for the selected disks:**, then click **OK** to initialize the disk.



3. When done, click **OK**.



4. Format the disk to complete the initialization.

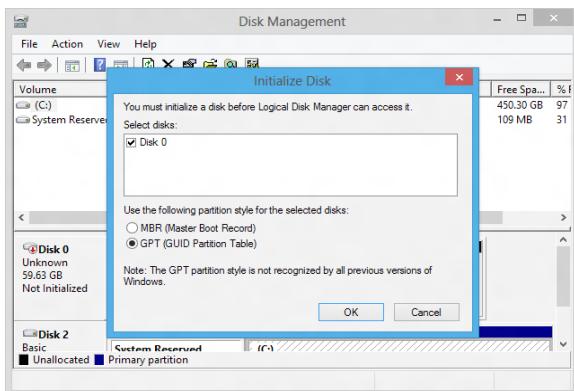
To format the disk, perform either of the following:

- From Windows Explorer, right-click on the disk that you want to format, select **Format** then click **Start**.
- From Windows **Disk Management**, right-click on the disk that you want to format, select **Format** then click **OK**.

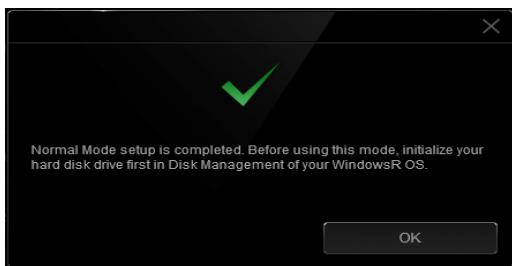
9.1.2 Switching from Super Speed mode to Normal mode

To switch from the Super Speed mode to the Normal mode:

1. From the **Hyper Express Mode** screen, click the Normal icon .
2. From the **Initialize Disk** window of the Windows **Disk Management** application, put a check mark on Disk 0 from the **Select disks** pane, tick GPT (GUID Partition Table) from the **Use the following partition style for the selected disks:**, then click **OK** to initialize the disk.



3. When done, click **OK**.



4. Format the disk to complete the initialization.

To format the disk, perform either of the following:

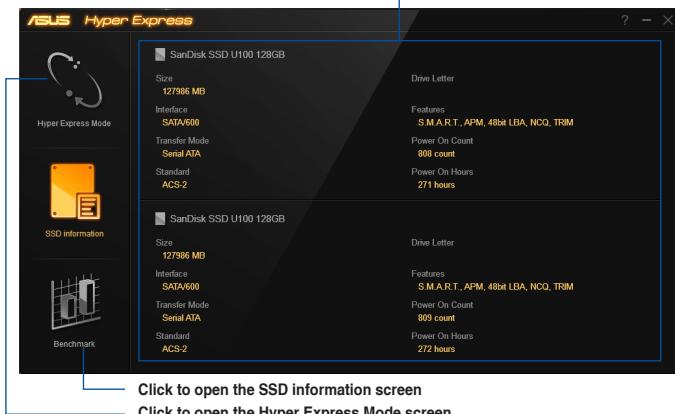
- From Windows Explorer, right-click on the disk that you want to format, select **Format** then click **Start**.
- From Windows **Disk Management**, right-click on the disk that you want to format, select **Format** then click **OK**.

9.2 SSD information

Displays information about the storage device installed on your Hyper Express.

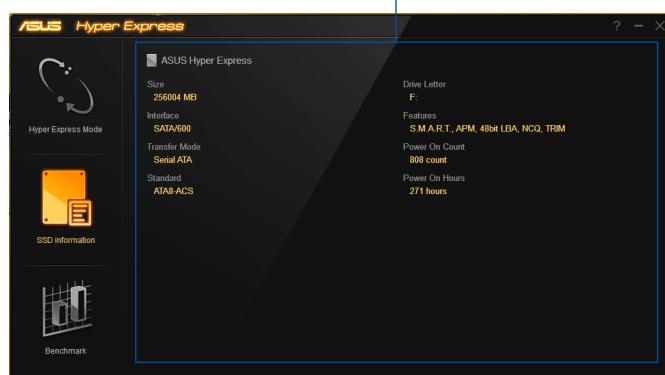
Normal mode

Information about the storage device



Super Speed mode

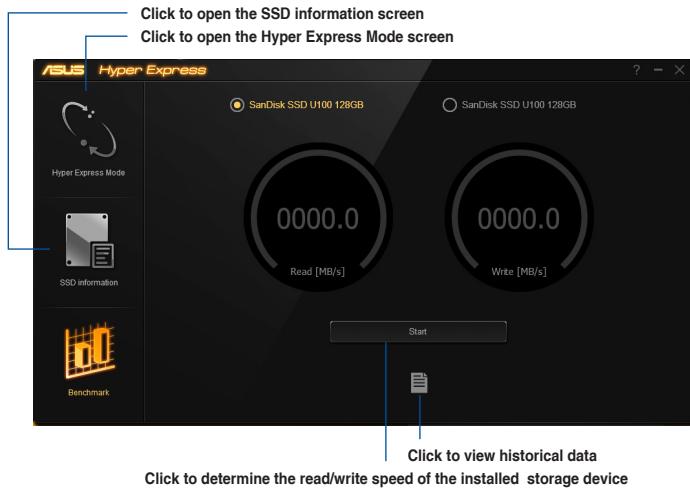
Information about the storage device



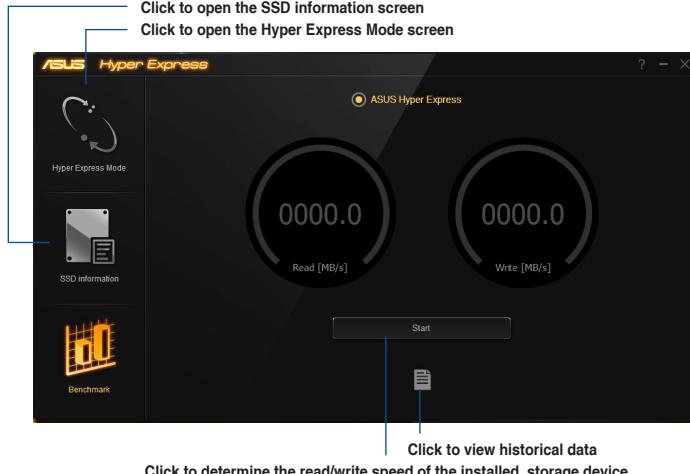
9.3 Benchmark

The Benchmark feature displays the read and write speed of the installed storage device when activated.

Normal mode



Super Speed mode



Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IC: Canadian Compliance Statement

Complies with the Canadian ICES-003 Class B specifications. This device complies with RSS 210 of Industry Canada. This Class B device meets all the requirements of the Canadian interference-causing equipment regulations.

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.
Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Cet appareil est conforme aux normes CNR exemptes de licence d'Industrie Canada. Le fonctionnement est soumis aux deux conditions suivantes :

- (1) cet appareil ne doit pas provoquer d'interférences et
- (2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité de l'appareil.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

VCCI: Japan Compliance Statement

Class B ITE

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

V C C I - B

This is a Class B product based on the standard of the VCCI Council. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

KC: Korea Warning Statement

B급 기기 (가정용 방송통신기자재)

이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

*당해 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.

REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at <http://csr.asus.com/english/REACH.htm>.



DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

ASUS contact information

ASUSTeK COMPUTER INC.

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Web site	http://www.asus.com

Technical Support

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Fax	+86-21-5866-8722, ext. 9101#
Online support	http://support.asus.com/techserv/techserv.aspx

ASUS COMPUTER INTERNATIONAL (America)

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Fax	+1-510-608-4555
Web site	http://usa.asus.com

Technical Support

Telephone	+1-812-284-0883
Support fax	+1-812-282-2787
Online support	http://support.asus.com/techserv/techserv.aspx

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